

REMARKS

Prior to entry of this paper, Claims 1-30 were pending. Claims 1-25 and 27 were rejected, and Claims 26 and 28-30 were objected to. In this paper, Claims 1, 13, 20-23, 25, and 27 are amended; and Claims 31-34 are added. Claims 13 and 20 are amended only to correct an antecedent basis informality in Claims 13 and 20, and not for reasons related to patentability ("the circuit" in claims 13 and 20 previously lacked antecedent basis). Claim 27 is amended to correct a clerical error in Claim 27. Claims 1-34 are currently pending. In this paper, whenever language is quoted from a claim that has been amended with regard to the portion of the claim quoted, the quoted claim language is that of the claim as amended. No new matter is added by way of this amendment. For at least the following reasons, Applicant respectfully submits that each of the presently pending claims is in condition for allowance.

Allowable Subject Matter

Claims 26 and 28-30 were objected to, but were identified as being allowable if re-written in independent form. It is respectfully submitted that Claims 26 and 28-30 depend from an allowable claim for at least the reasons stated below.

Rejections based on Azimi

Claims 1-3, 5-11, and 13-24 were rejected under 35 U.S.C. § 102(b) as being anticipated by Azimi et al. (U.S. Patent No. 6,163,183) hereafter "Azimi". Claims 4, 12, and 25 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Azimi et al. (U.S. Patent No. 6,163,183) hereafter "Azimi" in view of Nakajima et al. (U.S. Patent No. 6,417,704) hereafter "Nakajima". Each of these rejections is respectfully traversed.

Claim 1

First, it is respectfully submitted that Claim 1 is allowable at least because Azimi fails to disclose, "a comparator circuit that is arranged to provide a trigger signal by comparing a reference signal to a temperature sensor signal", as recited in Applicant's Claim 1.

The Office states that there is no structural difference between Azimi and the claimed invention. However, it is respectfully submitted that there are multiple structural differences. For one, the circuit of Azimi has a bandgap reference coupled to the input that is alleged to receive a temperature sensor signal. The circuit of Claim 1 does not have a bandgap reference coupled to this input (if it did, it would not meet the recitations of Claim 1). The fact Azimi has a bandgap reference coupled to the input that is alleged to receive a temperature sensor signal, and the circuit of Claim 1 cannot include a bandgap reference at that input, is a structural difference.

The Office states that a temperature sensor signal can be any signal, and that a bandgap reference voltage is a temperature sensor signal because it is not absolutely independent of temperature. However, it is respectfully submitted that a bandgap reference voltage is not a temperature sensor signal, even using the broadest definition of one of ordinary skill in the art. See DECLARATION OF Perry Scott Lorenz UNDER 37 C.F.R. § 1.132 declaration 10 (“For this reason, it typically would be impossible to determine the temperature from simply knowing the bandgap reference voltage alone. This is yet another reason why a bandgap reference voltage could not reasonably be used as a temperature sensor signal, beyond the fact that the variance based on temperature is so small. Since a bandgap reference voltage is at a given voltage level at more than one temperature, the bandgap reference voltage is not indicative of a particular temperature.”) and declaration 11 (“An analog circuit engineer of reasonable competence could not reasonably construe the voltage at node 24 in Azimi, output by bandgap reference voltage 22, as a temperature sensor signal, even when the term ‘temperature sensor signal’ is construed as broadly as possible to one ordinary competence in the field of analog circuit design.”)

Second, it is respectfully submitted that Claim 1 is allowable at least because Azimi fails to disclose, “the hysteresis-and-output sensor circuit is arranged to disable a hysteresis at power up”, as recited in Applicant’s Claim 1. As stated in DECLARATION OF Perry Scott Lorenz UNDER 37 C.F.R. § 1.132, declaration 14, “The circuit of Azimi does not ensure that hysteresis is automatically inactive when the circuit of Azimi is powering up. Instead, the circuit of Azimi uses hysteresis to prevent multiple resets.” It is not clear whether OTHER RESET SIGNALS 120 of Azimi include a power-on reset signal. If OTHER RESET SIGNALS 120 of Azimi do not include a power-on reset signal, then Azimi clearly fails to meet the recitations of Claim 1. If OTHER

RESET SIGNALS 120 of Azimi do include a power-on reset signal, then Azimi also fails to meet the recitations of Claim 1, because Azimi enables hysteresis with RESET is asserted, rather than disables it.

Claim 22

The rejection to Claim 22 is respectfully traversed at least because Azimi fails to disclose, “a comparator circuit that is arranged to provide a trigger signal by comparing a reference signal to a temperature sensor signal”, as stated above with regard to Claim 1.

Additionally, Claim 22 is respectfully submitted to be allowable at least because Azimi fails to disclose, “the temperature sensor signal is indicative of a temperature”. As stated in DECLARATION OF Perry Scott Lorenz UNDER 37 C.F.R. § 1.132, declaration 10, “Since a bandgap reference voltage is at a given voltage level at more than one temperature, the bandgap reference voltage is not indicative of a particular temperature.”

Rejected Claims dependent on Claim 1 and 22

Each of these rejections to claims dependent on Claim 1 is respectfully traversed at least based on the claim’s dependence on Claim 1. Each of these rejections to claims dependent on Claim 22 is respectfully traversed at least based on its dependence on Claim 22.

Additionally, it is respectfully submitted that the rejection to Claim 21 should be withdrawn at least because Azimi fails to disclose, “the circuit for temperature sensing is arranged such that the comparator circuit trips when the temperature sensed by the temperature sensor signal reaches a predetermined level”. As stated in DECLARATION OF Perry Scott Lorenz UNDER 37 C.F.R. § 1.132, declaration 15, “The comparator 27 of Azimi does not trip based on the temperature reaching a predetermined level. Furthermore, the comparison performed by comparator 27 of Azimi could not reasonably be construed as a temperature comparison. Rather, the comparison performed by comparator 27 monitors an undervoltage condition of the monitored voltage V_{MONITOR} , which is a battery voltage or the like. If the battery voltage falls below a predetermined level, the comparator 27 will trip. The comparison therefore is a comparison of the battery voltage to a reference level, and not a temperature comparison, and comparator 27 does not trip based on the temperature

reaching a predetermined level. The temperature could remain constant throughout the entire operation of the circuit of Azimi, and comparator 27 would still trip.”

The Office Action stated, “Since the predetermined level is not defined it is opened for interpretation and as such the Examiner interpreted the predetermined level to be the level at which the temperature trips.” It is true that the predetermined level is not defined, but Azimi does not trip versus the temperature reaching any level at all, no matter what the level is defined as. As previously discussed, the temperature could remain constant throughout the entire operation of the circuit of Azimi, and the comparator would still trip. If the temperature was a constant 68 degrees Fahrenheit through the entire operation of the circuit of Azimi, and the comparator 27 trips when the battery voltage falls below the reference level, the comparator clearly did not trip based on reaching a predetermined level—the level never changed. It seems that the Office position is that, because the predetermined level is not specified, the recitation is meaningless—whatever temperature it happens to be when the comparator trips is simply the “predetermined level.” However, even though the predetermined level is not specified in the claim, it still has to be a predetermined level. The temperature that it just happens to be at the time that the comparator trips because the battery voltage fell below the reference level is not a predetermined temperature level. In order to meet the recitation, “the circuit for temperature sensing is arranged such that the comparator circuit trips when the temperature sensed by the temperature sensor signal reaches a pre-determined level”, there would need to be a **predetermined** level at which the comparator of Azimi would trip—tripping at a temperature not known until the comparator actually trips is not predetermined.

Additionally, it is respectfully submitted that the rejection to Claim 23 should be withdrawn because Azimi fails to disclose, “the temperature sensor signal is proportional to a temperature”. As stated in DECLARATION OF Perry Scott Lorenz UNDER 37 C.F.R. § 1.132, declaration 9, “The output voltage of a bandgap voltage reference is not proportional to absolute temperature”.

Additionally, it is respectfully submitted that the rejection to Claim 25 should be withdrawn at least because Azimi fails to disclose, teach, or suggest, “the hysteresis-and-output-sensor circuit is arranged to provide the hysteresis in a range of about 2°C to about 10°C of hysteresis for the temperature comparison when the hysteresis is enabled”. As stated in DECLARATION OF Perry Scott Lorenz UNDER 37 C.F.R. § 1.132, declaration 16, “The circuit of Azimi does not provide

temperature hysteresis, let alone 2 degrees to 10 degrees Celsius of temperature hysteresis. It would be nonsensical to modify the circuit of Azimi to provide temperature hysteresis in a range of about two degrees Celsius to 10 degrees Celsius. The temperature could remain constant throughout the entire operation of the circuit of Azimi, and comparator 27 would still trip. Accordingly, providing 2 degrees to 10 degrees Celsius of temperature hysteresis is not applicable to the circuit of Azimi.” There are no result effective variables that could be optimized in Azimi to cause hysteresis in a range of 2°C to about 10°C.

Claim 13

It is respectfully submitted that Azimi fails to meet *any* of the recitations of Claim 13.

First, it is respectfully submitted that Azimi fails to meet the recitation, “activating hysteresis if a temperature sensing condition has occurred.”

The Office Action states, “it does not have to do anything if the temperature-sensing condition has not occurred. Also, the claim does not state what the temperature-sensing condition is. Also if the hysteresis limitation is a negative limitation such that if no temperature sensing condition has occurred and no hysteresis is met the claim is met.”

As stated in DECLARATION OF Perry Scott Lorenz UNDER 37 C.F.R. § 1.132, declaration 13, “The circuit of Azimi does not activate hysteresis based on whether a temperature sensing condition of any type has occurred.”

Also, the Office’s statements do not change the fact that, in order to meet the recitation of Claim 13, there must exist at least one temperature sensing condition such that, if the temperature sensing condition is met, hysteresis is activated. In Azimi, no such temperature sensing condition exists, because hysteresis is activated based on an undervoltage condition occurring in the monitored voltage. If the battery is fully charged, then there is no temperature sensing condition under which hysteresis would be activated. Therefore, Azimi fails to meet the recitation, “the circuit of Azimi does not activate hysteresis based on whether a temperature sensing condition of any type has occurred”.

Furthermore, the position stated in the Office Action is a classic logical fallacy with regard to condition statements. For example, a classic example of a conditional statement is flammability.

To state that “paper is flammable” means “paper will ignite **if** subject to the proper conditions”. A piece of paper locked in a vault in the bottom of the ocean is still flammable. The piece of paper would still ignite if subject to the proper condition, just because those condition do not occur does mean that the paper is not flammable. Similarly, it would be a logical fallacy to attempt to prove the statement “asbestos is flammable” which is equivalent to “asbestos will ignite if subject to certain specified conditions” by simply proving that asbestos was never subject to those condition. The Office statement “the hysteresis limitation is a negative limitation such that if no sensing condition has occurred and no hysteresis is present then the claim is met” is equivalent to proving the asbestos is flammable because asbestos was not subject to conditions that would cause a flammable substance to ignite and therefore asbestos meets the condition that “asbestos will ignite if subject to conditions that would cause a flammable substance to ignite”. Rather, the condition is only proved if it is subject to those conditions and ignites under those conditions.

Similarly, in order to meet the recitation, “activating hysteresis if a temperature sensing condition has occurred”, there would have to be at least one temperature condition under which the circuit of Azimi activates hysteresis. However, there is no such condition, because if the monitored battery voltage of Azimi is fully charged, hysteresis would not occur no matter what temperature condition is present.

Second, it is respectfully submitted that Azimi fails to meet the recitation, “ensuring that the hysteresis is automatically inactive when the circuit is powering up”. As stated in DECLARATION OF Perry Scott Lorenz UNDER 37 C.F.R. § 1.132, declaration 14, “The circuit of Azimi does not ensure that hysteresis is automatically inactive when the circuit of Azimi is powering up. Instead, the circuit of Azimi uses hysteresis to prevent multiple resets.”

The Office Action states “power-up is interpreted as being implemented before the output of the feedback and therefore the hysteresis is interpreted as occurred after power-up. What is interpreted as the time period of power-up being left open to the broadest reasonable interpretation of the examiner.”

Applicant’s representative respectfully disagrees. Power-up does not occur prior to “the output of feedback”. Further, the statement of law is incorrect. The standard is not broadest reasonable interpretation of the **examiner**, but broadest reasonable interpretation of **one of ordinary**

skill in the art. See, e.g., MPEP 2111, “The broadest reasonable interpretation of the claims must also be consistent with the interpretation that those skilled in the art would reach”. As stated in DECLARATION OF Perry Scott Lorenz UNDER 37 C.F.R. § 1.132, declaration 19, “To an engineer of ordinary competence in the field of analog circuit design, ‘power up’ or ‘when the circuit is powering up’ is not an arbitrary term, and has a specific meaning and occurs at a specific time, rather than any arbitrarily designated time. To refer to ‘power up’ as occurring at any arbitrarily designated time would not be considered reasonable to an engineer of ordinary competence in the field of analog circuit design.” Under any reasonable interpretation to one of ordinary skill in the art, power-up would include time in which there is output of feedback, and therefore the Office’s argument does not apply and Azimi fails to meet the recitation, “ensuring that the hysteresis is automatically inactive when the circuit is powering up”.

Further, the broadest reasonable standard must be consistent with the specification. See MPEP 2111. The Office’s proposed definition of the time included in power-up is clearly inconsistent with the specification. If power-up included only times in which hysteresis could not yet be present, there would be no need for any of the circuits described in Applicant’s specification at all! The circuits shown in Applicant’s specification are specifically employed to deactivate hysteresis during power-up, because without that specific circuitry, the circuit might randomly either have hysteresis enabled or disabled during power up. Clearly, this discussion of power up in Applicant’s specification is inconsistent with defining power up in such a way that power up occurs exclusively in that time before hysteresis could even be present. For this additional reason, the Office interpretation of the time included in power up goes beyond the broadest reasonable interpretation consistent with the specification, and Azimi fails to meet the recitation, “ensuring that the hysteresis is automatically inactive when the circuit is powering up”.

Rejected Claims dependent on Claim 13; Claim 20

The rejection to Claim 20 is respectfully traversed for reasons similar to those stated above with regard to Claim 13.

Each of these rejections to claims dependent on Claim 13 is respectfully traversed at least based on the claim’s dependence on Claim 13.

Additionally, it is respectfully submitted that the rejection to Claim 16 should be withdrawn at least because Azimi fails to disclose, "comparing a temperature sensor signal to a reference signal". It is respectfully submitted that the bandgap reference voltage of Azimi is not a temperature sensor signal. As stated in DECLARATION OF Perry Scott Lorenz UNDER 37 C.F.R. § 1.132, declaration 10, "This is yet another reason why a bandgap reference voltage could not reasonably be used as a temperature sensor signal, beyond the fact that the variance based on temperature is so small. Since a bandgap reference voltage is at a given voltage level at more than one temperature, the bandgap reference voltage is not indicative of a particular temperature." As stated in DECLARATION OF Perry Scott Lorenz UNDER 37 C.F.R. § 1.132, declaration 11, "An analog circuit engineer of reasonable competence could not reasonably construe the voltage at node 24 in Azimi, output by bandgap reference voltage 22, as a temperature sensor signal, even when the term "temperature sensor signal" is construed as broadly as possible to one ordinary competence in the field of analog circuit design."

Additionally, it is respectfully submitted that the rejection to Claim 27 should be withdrawn at least because Azimi fails to disclose, "disabling the hysteresis until the power up is complete". The circuit of Azimi does not disable hysteresis until the power up is complete. See the arguments above regarding the time that can be reasonably construed as included in the power up.

Rejections based on Lim

Claims 1-3, 5-11 and 13-22 were rejected under 35 U.S.C. § 102(b) as being anticipated by Lim et al. (U.S. Patent No. 5,614,857) hereafter "Lim". Each of these rejections is respectfully traversed.

Claim 1

First, it is respectfully submitted that Claim 1 is allowable at least because Lim fails to disclose, "a comparator circuit that is arranged to provide a trigger signal by comparing a reference signal to a temperature sensor signal", as recited in Applicant's Claim 1.

As stated in DECLARATION OF Perry Scott Lorenz UNDER 37 C.F.R. § 1.132, declaration 17, "Voltage Vin2 of Lin is not a temperature sensor signal. The Office Action

theorizes that “the temperature of R11 increases as the current through it increases thereby providing a higher voltage Vin2”. Actually, Vin2 increases because it is following Vin1 but it is delayed by the RC circuit. This is true even if the resistor temperature were forced to be lower by the external environment. The relationship between resistance and temperature depends on the temperature coefficient of the resistor. The temperature coefficient of a resistor can be positive, negative, or even zero. Nowhere does the Lim reference mention resistor temperature coefficient, nor does Lim point out whether the temperature coefficient of any of the resistors is positive, negative, or zero. Accordingly, it cannot be determined whether the voltage increases, decreases, or remains the same with an increase in temperature.”

Second, it is respectfully submitted that Claim 1 is allowable at least because Lim fails to disclose, “a gate circuit that is arranged to provide an output signal by gating a gate input signal subject to control by a gate control signal, wherein the gate input signal is based at least in part on the trigger signal, and wherein the gate control signal is based at least in part on the power-on-reset signal”.

As stated in DECLARATION OF Perry Scott Lorenz UNDER 37 C.F.R. § 1.132, declaration 18, “The circuit of Lim has no power on reset (POR) signal at all. The term ‘power on reset signal’ has a specific meaning to an engineer of ordinary competence in the field of analog circuit design, and is not arbitrary in meaning. To refer to any arbitrary signal as a ‘power on reset’ signal would not be considered reasonable to an engineer of ordinary competence in the field of analog circuit design.”

The Office uses Vin1 of Lim as a power on reset signal. However, even under the “broadest reasonable interpretation” standard, Vin1 of Lim cannot be construed as a power on reset signal. First, broadest reasonable interpretation must be consistent with the interpretation that those skilled in the art would reach. (See MPEP 2111). The Office position that Vin1 of Lin could be viewed as a power on reset (POR) signal is not consistent with the interpretation that one of ordinary skill in the art. Second, the broadest reasonable interpretation must be consistent with the specification. (See MPEP 2111). The Office position that Vin1 of Lin could be viewed as a power on reset (POR) signal is not consistent with the specification (see, e.g., page 6, lines 6-7 of Applicant’s

specification, "signal POR changes from logic zero to logic one shortly after power has been applied".

Claim 22

The rejection to Claim 22 is respectfully traversed at least because Lim fails to disclose, "a comparator circuit that is arranged to provide a trigger signal by comparing a reference signal to a temperature sensor signal", as stated above with regard to Claim 1.

Additionally, Claim 22 is respectfully submitted to be allowable at least because Azimi fails to disclose, "the temperature sensor signal is indicative of a temperature".

Rejected Claims dependent on Claim 1 and 22

Each of these rejections to claims dependent on Claim 1 is respectfully traversed at least based on the claim's dependence on Claim 1. Each of these rejections to claims dependent on Claim 22 is respectfully traversed at least based on its dependence on Claim 22.

Additionally, it is respectfully submitted that the rejection to Claim 21 should be withdrawn at least because Lim fails to disclose, "the circuit for temperature sensing is arranged such that the comparator circuit trips when the temperature sensed by the temperature sensor signal reaches a predetermined level". As stated in DECLARATION OF Perry Scott Lorenz UNDER 37 C.F.R. § 1.132, declaration 22, "In the circuit of Lim, the comparator OP20 tripping is not based on a temperature comparison, and is not based on the temperature reaching a predetermined level, but is instead based on whether Vin1 is high or low and on the hysteresis operation as illustrated in FIG. 5A-5E. The temperature could remain constant throughout the entire operation of the circuit of Lim, and comparator OP20 would still trip."

The Office Action stated, "With respect to the sensor signal reaching a predetermined level, any level can be interpreted as the predetermined level." It is true that the predetermined level is not defined, but Lim does not trip versus the temperature reaching any level at all, no matter what the level is defined as. As previously discussed, the temperature could remain constant throughout the entire operation of the circuit of Lim, and the comparator would still trip. If the temperature was a constant 68 degrees Fahrenheit through the entire operation of the circuit of Lim, and the

comparator OP20 still trips based on whether Vin1 is high or low. It seems that the Office position is that, because the predetermined level is not specified, the recitation is meaningless—whatever temperature it happens to be when the comparator trips is simply the “predetermined level.” However, even though the predetermined level is not specified in the claim, it still has to be a predetermined level. The temperature that it just happens to be at the time that the comparator trips based on whether Vin1 is high or low is not a predetermined temperature level.

Claim 13

It is respectfully submitted that Lim fails to meet *any* of the recitations of Claim 13.

First, it is respectfully submitted that Lim fails to meet the recitation, “activating hysteresis if a temperature sensing condition has occurred.”

As stated in DECLARATION OF Perry Scott Lorenz UNDER 37 C.F.R. § 1.132, declaration 18, “The circuit of Lim does not activate hysteresis based on whether a temperature sensing condition of any type has occurred.”

Second, it is respectfully submitted that Lim fails to meet the recitation, “ensuring that the hysteresis is automatically inactive when the circuit is powering up”. As stated in DECLARATION OF Perry Scott Lorenz UNDER 37 C.F.R. § 1.132, declaration 19, “The circuit of Lim does not ensure that hysteresis is automatically inactive when the circuit is powering up. To an engineer of ordinary competence in the field of analog circuit design, ‘power up’ or ‘when the circuit is powering up’ is not an arbitrary term, and has a specific meaning and occurs at a specific time, rather than any arbitrarily designated time. To refer to ‘power up’ as occurring at any arbitrarily designated time would not be considered reasonable to an engineer of ordinary competence in the field of analog circuit design.”

Rejected Claims dependent on Claim 13; Claim 20

The rejection to Claim 20 is respectfully traversed for reasons similar to those stated above with regard to claim 13.

Each of these rejections to claims dependent on Claim 13 is respectfully traversed at least based on the claim’s dependence on Claim 13.

Additionally, it is respectfully submitted that the rejection to Claim 16 should be withdrawn at least because Lim fails to disclose, "comparing a temperature sensor signal to a reference signal". It is respectfully submitted that voltage Vin2 of Azimi is not a temperature sensor signal. As stated in DECLARATION OF Perry Scott Lorenz UNDER 37 C.F.R. § 1.132, declaration 17, "Voltage Vin2 of Lin is not a temperature sensor signal. The Office Action theorizes that 'the temperature of R11 increases as the current through it increases thereby providing a higher voltage Vin2'. Actually, Vin2 increases because it is following Vin1 but it is delayed by the RC circuit. This is true even if the resistor temperature were forced to be lower by the external environment. The relationship between resistance and temperature depends on the temperature coefficient of the resistor. The temperature coefficient of a resistor can be positive, negative, or even zero. Nowhere does the Lim reference mention resistor temperature coefficient, nor does Lim point out whether the temperature coefficient of any of the resistors is positive, negative, or zero. Accordingly, it cannot be determined whether the voltage increases, decreases, or remains the same with an increase in temperature."

Additionally, it is respectfully submitted that the rejection to Claim 27 should be withdrawn at least because Lim fails to disclose, "disabling the hysteresis until the power up is complete". The circuit of Lim does not disable hysteresis until the power up is complete. See the arguments above regarding the time that can be reasonably construed as included in the power up.

Claims 31-34

Claims 31-34 are respectfully submitted to be allowable at least because they depend from Claim 13.

CONCLUSION

It is respectfully submitted that each of the presently pending claims (Claims 1-34) is in condition for allowance and notification to that effect is requested. Examiner is invited to contact the Applicants' representative at the below-listed telephone number if it is believed that the prosecution of this application may be assisted thereby. Although only certain arguments regarding patentability are set forth herein, there may be other arguments and reasons why the claimed invention is patentable. Applicant reserves the right to raise these arguments in the future.

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Respectfully submitted,

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